

PATENT SPECIFICATION

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COMPLETE SPECIFICATION

DRAWINGS ATTACHED

Improved Set Screw

We, G.K.N. SCREWS & FASTENERS LIMITED, a British Company of Heath Street, Birmingham, 18, in the County of Warwick, do hereby declare the invention for which we pray that a Patent may be granted to us and the method by which it is to be performed to be particularly described in and by the following statement:—

This invention relates to a set screw, 10 being a screw which is used to lock a shaft, rod or the like in position in a housing member and also capable of use in other applications such as the electrical industry where a set screw may be used to lock a 15 wire or other conductor in position. In such applications the screw is used so that its operative end bears upon the shaft or the like which is being locked in position.

One drawback to this form of locking for 20 a shaft or wire or the like is that the operative end of the set screw may damage the surface of the shaft or other member and may cause severe mutilation or severing of a wire when used to lock it into position. Also, 25 particularly when used on shafts or rods which are subject to vibration, the set screw may work loose under vibration and thus the locking action is lost.

An object of the invention is to provide 30 an improved set screw in which the aforementioned disadvantages are avoided.

According to the invention there is provided a set screw having at its operative end a cap member of resilient, synthetic resinous material which is rotatably and captively mounted about an end portion of the screw shank which is of reduced cross-section relative to the threaded part of the shank.

In a preferred form the said end portion 40 is formed to provide a neck between the free end of said end portion and the threaded part of the shank, the neck being of lesser cross-section than said end and part, and

the cap has a collar portion which engages the neck to hold the cap captive on the 45 shank. Preferably, the cap member has an outer form which is generally cylindrical. The external diameter of the cap member is slightly less than the core diameter of the internal thread in the housing which receives 50 the set screw, to allow the set screw to be freely inserted in the housing.

The invention will now be described by way of example with reference to the accompanying drawing which is an elevation, 55 partly in section, of a set screw embodying the invention.

Referring now to the drawing this shows a set screw formed with an enlarged, wrench-engaging head 1 at one end of an externally 60 threaded shank 2 of cylindrical form. The end portion of the shank remote from the head has an axially extending neck 3 which is of reduced diameter as compared with the diameter of the threaded part 4 of the shank 65 2. The free end 5 of the shank is of diameter greater than that of the neck 3, but still less than that of the threaded part 4.

A cap member 6, preferably made of a suitable nylon having the desired properties 70 of toughness, resilience and resistance to wear, has an outer form of cylindrical body of diameter less than the root diameter of the threaded part 4 of the shank, and is provided at one end with a recess 7 having 75 a generally cylindrical portion 8 of slightly larger diameter than the neck 3 and having a portion 9 of larger diameter to accommodate the free end 5 of the shank.

The cap member is applied to the axial 80 extension 3, 5, of the shank by pushing the portion 8 of the cap over the free end 5 so that the portion 8 springs back to its original shape around the neck portion 3 so that a collar 10 formed around the neck portion 85 engages the free end 5 which is accom-

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modulated in the enlarged portion 9 of the cap member 6 so that the cap member is retained captive on the end of the screw shank but is still capable of rotation relative to the screw shank and about the axis thereof.

When such a set screw is used in a housing member for locking a shaft in position in the housing member, the cap member 6 forming the operative end of the screw engages the shaft, and as the set screw is tightened down, the cap member remains stationary, so as to allow the set screw shank 2 to rotate relatively thereto, and also deforms as the axial pressure increases but without in any way damaging the surface of the shaft. This deformation of the cap member 6, owing to its resilient nature, sets up a force in the shank acting along its axis so as to force the flanks of the thread into frictional engagement with the corresponding flanks of the internal thread in the housing member and thus provide increased frictional resistance to any unscrewing movement of the set screw which might arise when it is subject to vibration.

Where such a set screw is used for locking a shaft having an externally threaded portion by engaging the thread of the shaft, the material of the cap member 6 will deform when it engages the thread on the shaft. However since the cap member remains stationary relative to the shaft it will not get

mutilated and thus will wholly or partially recover its original form when the set screw 35 is removed.

WHAT WE CLAIM IS:—

1. A set screw having at its operative end a cap member of resilient, synthetic resinous material which is rotatably and captively mounted about an end portion of the screw shank which is of reduced cross-section relative to the threaded part of the shank.

2. A set screw as claimed in Claim 1 in which the said end portion is formed to provide a neck between the free end of said end portion and the threaded part of the shank, the neck being of lesser cross-section than said end and part, and the cap having a collar portion which may be sprung over said free end to engage the neck to hold the cap captive on the shank.

3. A set screw as claimed in Claim 2 in which the cap member has an outer form which is generally cylindrical.

4. A set screw substantially as hereinbefore described with reference to and as shown in the accompanying drawing.

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1 SHEET

COMPLETE SPECIFICATION

*This drawing is a reproduction of
the Original on a reduced scale.*

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